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Structural Basis for Selective Recognition of Oligosaccharides by DC-SIGN and DC-SIGNR

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Dendritic Cell Specific ICAM-3 Grabbing Non-integrin (DC-SIGN), a C-type lectin present on the surface of dendritic cells, mediates their initial interaction with T cells by binding to ICAM-3. DC-SIGN and DC-SIGNR, a related receptor found on the endothelium of liver sinusoids, placental capillaries, and lymph nodes, bind to oligosaccharides present on the envelope of human immunodeficiency virus (HIV), an interaction that strongly promotes viral infection of T cells. Crystal structures of carbohydrate-recognition domains of DC-SIGN and DC-SIGNR bound to oligosaccharide, combined with binding studies, reveal that these receptors selectively recognize endogenous high-mannose oligosaccharides, and may represent a new avenue for developing HIV prophylactics.